or rather adhesion to another individual of its own species, may be observed in Milne-Edwards's figure of the type-specimen of *Rhizotrochus**. The species now under consideration should, I think, be placed in the genus *Flabellum*, although differing in some of its characters from most of the typical forms; and as it is the largest member of the genus, I propose to call it *nobile*.

The precise habitat of this coral is unknown. It was brought to this country by the late Sir Everard Home; and as that gentleman's collections were principally made in the neighbourhood of Australia and New Zealand, these corals were probably obtained from the same part of the world.

The specimens are now in the Museum of the Royal College of Surgeons of England.

5. On the Occurrence of Caryophyllia clavus on the Coasts of Britain, with some Remarks on the Circumstances affecting the Distribution of Corals around the British Islands. By E. W. H. Holdsworth, F.L.S., F.Z.S., etc.

By the kindness of the Rev. Thomas Hincks of Leeds, I have recently been enabled to examine some specimens of coral which had been forwarded to him from Shetland, and from Loch Fyne on the east coast of Scotland. They prove to be new to Britain, and are identical with the *Caryophyllia clavus* of the Mediterranean, first described as a fossil by Scacchi in 1833, and figured and described from recent specimens under the name of *Cyathina turbinata* by Philippi in his 'Catalogue of Sicilian Mollusca,' published in 1836. Several examples of this coral have been obtained from deep water in the above-mentioned localities; and an examination of characteristic specimens of different ages has enabled me also to identify with this species two small and much-worn corals which, in June 1857, were dredged from a depth of 60 fathoms, about forty miles west of Scilly, by Mr. S. P. Woodward of the British Museum, and kindly placed in my hands a short time ago by that gentleman.

This species of *Caryophyllia* may be readily distinguished from its near ally, our common *C. smithii*, by its conical form and finely pointed base, as well as by the thinness of its walls and lamellæ. The general character of the polype, as described by Philippi†, agrees with that of *C. smithii*; the integuments, however, are said to be excessively delicate and transparent, so that the borders of the lamellæ can be seen through them. The body is of an orange-colour, and the capitate tentacles whitish with metallic-green reflections. The coral is frequently attached to a tube of *Ditrupa*, or the shell of some deep-water univalve, or, in some cases, is entirely free. In

* Milne-Edwards et J. Haime, Ann. des Sc. Nat. 3e sér. t. ix. p. 282, pl. 8. f. 16, 1848.

† Philippi, Arch. für Naturgesch. t. i. p. 42, 1842.

the British Museum are several specimens of this coral which were brought from Sicily. These are all attached to a species of *Turritella*. The occurrence of this second species of *Caryophyllia* in three distinct localities on our coasts entitles it to a place among our British corals; and further investigation will probably show it to be generally distributed in the deep water along our western shores.

It may not be uninteresting to inquire here into the distribution of corals around the British Islands, and to trace, as far as possible, the cause of their frequenting only particular lines of coast.

The existence of the coral-polype in our seas is mainly dependent on the warmth and purity of the water. A tolerably high temperature is undoubtedly one of the most necessary conditions for the well-being of the delicate polypes whose calcareous lamellated skeletons constitute the true stony corals. Only within the tropics do we meet with those vast reefs and extensive accumulations of coral-growth which form so characteristic a feature of the seas in those warm latitudes. The surface-water there becomes heated by the direct influence of the sun, and, in those regions, few coral-polypes carry on their ceaseless work at a greater depth than 30 fathoms, thence building upward to the lowest tide-mark. As we come towards more temperate regions, the species diminish both in size and number; simple forms become proportionately more numerous, and their bathymetrical range is greatly increased.

The waters of north-western Europe might be expected generally to be too much within the influence of Polar temperature to be fitted for coral-life, even in its simplest form; yet in our own seas, and extending far into the Arctic Ocean, are found some few species vying with the productions of the Tropics in brilliancy of colouring and delicacy of structure. Here, however, we have a peculiar and extraneous source of warmth in the Gulf Stream, whose waters, now becoming widely diffused, but still retaining some portion of their original excessive temperature and motion, exercise a sensible influence on the coast-productions of the western side of the British islands. The course of the current in the neighbourhood of our shores is marked sparingly, but distinctly, by the presence of eight or ten species of living coral.

The long list of *habitats* recorded by Mr. Gosse in his valuable 'Actinologia Britannica' has been of great use to me in tracing the range of our native species; and although many parts of the coast have been but little worked, enough has been done to furnish a tolerably clear outline of the distribution of the coralligenous polypes. From the writings of Maury and others, it appears that the Gulf Stream is divided by the British Islands; one portion going southward to the Bay of Biscay, the other and main body of the current sweeping away to the north by the Orkneys and Shetland. The entrance of the English Channel and the Irish Sea would thus be under the most direct influence of the warm current; and it is in these waters we find corals most abundant. Devonshire and Cornwall are extremely rich in these productions; and, including Weymouth Bay (the only recognized locality for *Hoplangia durotrix*), the south-

western promontory of England can boast of five out of the eight undoubted British species. They consist of two *Caryophylliæ*, one *Sphenotrochus*, *Balanophyllia*, and *Hoplangia*. Of these species, Guernsey produces two. *Caryophyllia smithii*, the commonest species in the West of England, where it is found close to low-tide mark, ranges along the eastern and northern coasts of Ireland and the West of Scotland as far as Shetland, gradually increasing its depth of water as it proceeds north. It has also been met with on the western coast of Ireland; but very little has been done as yet in exploring the Atlantic sea-board of that island. Among the Hebrides and Orkneys, the fine branching coral *Oculina prolifera* has on rare occasions been met with, but only in deep water. Two species of *Caryophyllia* and the large scarlet *Ulocyathus arcticus* have been obtained in 80 or 90 fathoms near Shetland; the last-mentioned coral has also been taken by Sars at a depth of nearly 200 fathoms near the North Cape. Three other little corals have been dredged in the Moray Frith, and placed by Mr. Gosse in the genus *Paracyathus* of Milne-Edwards. The specimens, however, are so young and imperfect that it is difficult to determine their specific characters.

If we now turn to the eastern side of Great Britain, and inquire whence come the waters of the German Ocean, we find them to be mainly of Polar origin, brought from the far north by the great surface-current which washes all the Norwegian and our own eastern coasts. To this must be added the comparatively fresh water which pours through the Sound, loaded with all the drainage of the Baltic. How does this cold and impure water affect the production of corals? Its influence is not less marked than that of the warmer western current. Through the entire length of the North Sea, from the north-eastern point of Scotland to near the Isle of Wight, I have been unable to ascertain that a single specimen of coral has ever been taken. That line of coast is also very deficient in *Actiniæ*; and of the few that are found there, most are of the commonest species. This cold water from the north, however, also skirts the western coast of Scotland and Ireland; but it is only as a narrow superficial current; and when corals are found in its neighbourhood, they are only in the deep water of the great Atlantic stream, which, still retaining some of its excess of saline matter, sinks deeper and deeper as it meets the fresher and lighter, although colder, water from the north. Thus, as has been observed, all the northern corals are found in deep water, even the same species which on the Devonshire coast is abundant at low-water mark. The late Edward Forbes, in his 'Natural History of the European Seas,' remarks that the characteristic fauna of the "Arctic province" is only to be observed in the littoral regions, and the animals from deep water are all of them southern forms.

What has been pointed out as to the causes of the particular distribution of the British corals, namely, the effect of warm and cold currents, equally applies to the formation of coral-reefs within the Tropics. A comparison of Maury's Chart of the "Sea-drift" with Darwin's Map of the Distribution of Coral-reefs would lead one

to suppose they had been prepared by the same hand. I will mention two remarkable cases as illustrations. A well-known barrier-reef extends some hundreds of miles along the north-east coast of Australia; its southern limit is near Moreton Bay; and a reference to Maury's Chart shows this to be the precise point at which a cold current from the South Pole meets the warm equatorial current from the east. Again, it appears somewhat remarkable that along the whole western coast of North and South America no vestige of coral has been found. Mr. H. Cuming informs me that he has dredged in vain for specimens of these characteristic tropical productions in the Bay of Panama and at the Galapagos; but the chart shows that cold currents from the north and south sweep the whole western coasts of America, meeting at the Equator, and then turning away into the Pacific, where, under a vertical sun, the water soon becomes warm enough for the growth of the various coral-reefs scattered about in that ocean. Fresh water and sediment of any kind being present act as fatal barriers to the growth of coral; and to these causes may generally be traced gaps in reefs, and waste places of limited extent in those seas which especially abound in corals. Dana has recognized the effect of warm and cold currents in the general distribution of corals throughout the warmer seas; and the fact of the same influences being at work, and easily recognized, in the waters surrounding the British Islands appears sufficiently interesting to justify me in bringing the subject before this Society.

6. Note on the Size of a Seal at the time of Birth. By Dr. J. E. Gray.

We have received from the Zoological Gardens the body of a Ringed Seal (*Callocephalus fœtidus*), that had died soon after its birth. It was entirely covered with closely set, well-developed fur of a silver-grey colour, being rather browner on the upper surface. It is 2 feet 8 inches long, from the tip of the nose to the end of tail; the fore paws are 6, and the hinder 8 inches long, and the latter are 7 inches wide when expanded. The webs of the feet are covered with hair, and the claws are well developed and black. The whiskers are white, well developed, and slightly waved.

7. Descriptions of New Shells. By Dr. H. Dohrn.

1. Cataulus blanfordi.

Testa subperforata, ovato-fusiformis, solida, confertim striata, parum nitens, rufa; spira convexo-turrita, apice obtusiusculo; anfr. 9, *convexiusculi, ultimus attenuatus, antice subascendens; carina umbilicalis compressa, valida, antice vix dilatata; periomphalum angustum, costulato-striatum; apertura subcircularis; peristomium aurantiaco-fuscum, incrassatum, valde expansum, reflexum, ad anfractum penultimum angustatum, mar-*